CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/KRIDL/W.No.14/CSR.11/668k/(QB)/2014-15 03.11.2014

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

* CUSTOMER	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
* NAME OF WORK	:	Improvements to Cross Road at 8th, 11th, 12th, 13th, 14th, 15th and 16th Cross Road at Havanoor Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	:	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 03.11.2014
SAMPLE ID	:	Bitumen
SAMPLE RECEIVED ON	:	03.11.2014
PERIOD OF TESTING	:	15.11.2014 to 19.11.2014

The results of the tests conducted on the Bitumen sample are as follows:

Sl.No	Description	Technical Reference	Test Result	Requirement as per IS: 73-2013
1	Penetration at 25^{0}C, 100g, 5 Sec 1/10 mm	IS: 1203-1978 (RA-2009)	92.0	80 to 100
2	Softening point, ^{0}C	IS: 1205-1978 (RA-2009)	46.0	Min. 40
3	Ductility at 27^{0}C, cm	IS: 1208-1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS: 1209-1978 (RA-2009)	294	Min. 220

*Information is furnished by the Customer/Representative.

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VISHWANATH .C
Quality Manager

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Job No.: CTCE/BBMP/KRIDL/W.No.14/GSB-1/GR/2014-15 Date : 06.11.2014

GRADATION FOR GSB-I (CLOSE GRADED)
IS: 2720 (Part 4)

Customer : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of work : Improvements to Cross Road at 8th, 11th, 12th, 13th, 14th, 15th and 16th Cross Road at Havanoor Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 03.11.2014

Date of Testing : 06.11.2014

Sample Source : GSB Mix Plant Bangalore. **Oven Dry Wt (gm) :** 25300

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	0	100
53.0	980	980	3.87	96.13	80-100
26.50	6375	7355	29.07	70.93	55-90
9.50	5430	12785	50.53	49.47	35-65
4.75	3575	16360	64.66	35.34	25-55
2.36	2695	19055	75.32	24.68	20-40
0.425	2560	21615	85.43	14.57	10-25
0.075	2310	23925	94.57	5.43	3-10
PAN	1375				
Total	25300				

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading I

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NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/KRIDL/W.No.14/WMM/Gradation/2014-15

10.11.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements to Cross Road at 8th, 11th, 12th, 13th, 14th, 15th and 16th Cross Road at Havanoor Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 03.11.2014

Date of Testing : 10.11.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **25400**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	1010	1010	4.0	96.0	95-100
22.4	6355	7365	29.0	71.0	60-80
11.2	5470	12835	50.5	49.5	40-60
4.75	4465	17300	68.1	31.9	25-40
2.36	3485	20785	81.8	18.2	15-30
0.600	2110	22895	90.1	9.9	8-22
0.075	2240	25135	99.0	1.0	0-8

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Job No.: CTCE/BBMP/KRIDL/W.No.14/BM/Bitumen/2014-15 21.11.2014

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MACADAM MIX

As Per IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Cross Road at 8th, 11th, 12th, 13th, 14th, 15th and 16th Cross Road at Havanoor Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 03.11.2014
SAMPLE I/D	Cross Roads at Havnoor Layout in Bagalagunte W.No.14, BBMP, Bangalore.
DATE OF TESTING	21.11.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482.5	482.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	17.5	17.50
7. Bitumen content in %	3.50	3.50
8. Average	**3.50**	

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Job No.: CTCE/BBMP/KRIDL/W.No.14/BM/Bitumen/2014-15 21.11.2014

GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

As Per IS2386 and IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Cross Road at 8th, 11th, 12th, 13th, 14th, 15th and 16th Cross Road at Havanoor Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 03.11.2014
SAMPLE I/D	Cross Roads at Havnoor Layout in Bagalagunte W.No.14, BBMP, Bangalore.
DATE OF TESTING	21.11.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	32.56	6.75	6.75	93.25	90-100
13.2	127.4	26.40	33.15	66.85	56-88
4.75	215.9	44.75	77.90	22.10	16-36
2.36	68.32	14.16	92.06	7.94	4-19
0.3	10.58	2.19	94.25	5.75	2-10
0.075	3.56	0.74	94.99	5.01	0-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	33.67	6.98	6.98	93.02	90-100
13.2	128.5	26.63	33.61	66.39	56-88
4.75	225.6	46.76	80.37	19.63	16-36
2.36	54.28	11.25	91.62	8.38	4-19
0.3	13.54	2.81	94.42	5.58	2-10
0.075	5.87	1.22	95.64	4.36	0-8

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Job No.: CTCE/BBMP/KRIDL/W.No.14/SDBC/Bit/2014-15 22.11.2014

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX AS PER IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Cross Road at 8th, 11th, 12th, 13th, 14th, 15th and 16th Cross Road at Havanoor Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 03.11.2014
SAMPLE I/D	Cross Roads at Havnoor Layout in Bagalagunte W.No.14, BBMP, Bangalore.
DATE OF TESTING	22.11.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	25.50
7. Bitumen content in %	5.00	5.10
8. Average	**5.05**	

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Job No.: CTCE/BBMP/KRIDL/W.No.14/SDBC/Bit/2014-15 22.11.2014

GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX AS PER IS2386 & IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Cross Road at 8th, 11th, 12th, 13th, 14th, 15th and 16th Cross Road at Havanoor Layout in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 03.11.2014
SAMPLE I/D	Cross Roads at Havnoor Layout in Bagalagunte W.No.14, BBMP, Bangalore.
DATE OF TESTING	22.11.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	36.13	7.61	7.61	92.39	90-100
4.75	255.4	53.77	61.37	38.63	35-51
2.36	57.12	12.03	73.40	26.60	24-39
1.18	45.26	9.53	82.93	17.07	15-30
0.3	27.96	5.89	88.81	11.19	9-19
0.075	24.32	5.12	93.93	6.07	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	35.28	7.44	7.44	92.56	90-100
4.75	252.8	53.28	60.71	39.29	35-51
2.36	53.47	11.27	71.98	28.02	24-39
1.18	45.28	9.54	81.52	18.48	15-30
0.3	32.12	6.77	88.29	11.71	9-19
0.075	28.65	6.04	94.33	5.67	3-8

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